

30: THE RELATIONSHIP BETWEEN BLASTOCYST DEVELOPMENT AND ESTRADIOL CONCENTRATION ON DAY OF HCG TRIGGER AFTER STANDARDIZED CONTROLLED OVARIAN STIMULATION (COS)

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Objective

To study the relationship between estradiol (E2) concentrations on day of human chorionic gonadotropin (hCG) trigger and embryo development after a standardized COS protocol for in vitro fertilization (IVF).

Design

Prospective study of 218 IVF cycles from 2016 and 2018 in a private IVF center.

Material and Methods

Women 21-41 years of age were screened using strict inclusion criteria including anti-Mullerian hormone >1.0 ng/ml, follicle stimulating hormone (FSH) ≤10 IU/mL, luteinizing hormone <12 IU/mL, E2 <50 pg/mL on day 2-4 of menstrual cycle. Patients received a start dose of 300 IU/day of recombinant FSH or highly-purified human menopausal gonadotropin for the first five days of stimulation. Thereafter, patients underwent individual adjustments up to a total of 450 IU/day to optimize ovarian response. hCG was used to trigger maturation when 3 follicles reached 17mm, and oocyte retrieval was performed 36 hours later. Embryos were graded using the Society for Assisted Reproductive Technology standardized system. The percentage of usable blastocysts after 5-6 days of culture was defined as the percentage of 2 pronuclear (2pn) zygotes that had developed into good-quality blastocysts that were transferred or frozen. Statistical analysis was performed using a two-sample t-test and Minitab 18. Statistical significance was set at P<0.05. Means ± standard error of the mean were calculated.

Results

The mean percentage of 2pn zygotes that developed into usable blastocysts when E2 on day of hCG trigger was <2500 pg/ml was 44.5 ± 2.2 (n=142), which was higher (P=0.003) than when it was >2500 pg/ml (n=76) at 35.9 ± 2.2.

Conclusions

There is debate in the literature about whether supraphysiological concentrations of E2 on day of trigger have a direct effect on embryo development. In this study, we found that an E2 greater than 2500 pg/ml on the day of hCG trigger was associated with lower percentage of usable blastocysts that developed from 2pn zygotes.

Support

None